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# The Use of an Ethnic Food Frequency Questionnaire Among Hispanic Women

Susan Jordan
*University of Nebraska - Lincoln*

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# THE USE OF AN ETHNIC FOOD FREQUENCY QUESTIONNAIRE AMONG HISPANIC WOMEN

**Linda S. Boeckner**

*Department of Nutritional Science and Dietetics*
*Panhandle Research and Extension Center, University of Nebraska*
*4502 Avenue I*
*Scottsbluff, NE 69361-4939*
*lboeckner1@unl.edu*

**Susan A. Jordan** and **Marilynn I. Schnepf**

*Department of Nutritional Science and Dietetics*
*University of Nebraska-Lincoln*
*Lincoln, NE 68588-0806*

**ABSTRACT**—The objective of this study was to determine if an Ethnic Food Frequency questionnaire more accurately reflected food intake among immigrant Hispanic women compared to US-born Hispanic women. Participants in the study consisted of 30 immigrant and 25 US-born Hispanic low-income women living in the Grand Island, Nebraska, area. A traditional food frequency questionnaire used by the Nebraska Women, Infants, and Children's (WIC) Special Supplemental Food program and a modified questionnaire containing ethnic foods were administered to the women. The immigrant group consumed more of the traditional Hispanic foods than did the US-born group. A traditional food frequency questionnaire that did not include ethnic foods did not accurately measure food intake among recently arrived Hispanic immigrants. Use of a modified food frequency questionnaire that reflects typical ethnic foods of recently arrived immigrant groups would be important for assessing nutritional status of new immigrants. Such an instrument would be useful in health clinics and other medical settings that serve new immigrants.

## Introduction

One of the challenges facing dietitians and nutritionists is to accurately assess food intake. Many tools have been developed to estimate food intake, including food frequency questionnaires, three-day food records, and food recall methods. Each of these methods has advantages

and disadvantages that make them more appropriate to use in different settings (Block and Hartman 1989). The Women, Infants, and Children's (WIC) Special Supplemental Food Program is a nutrition program for pregnant and lactating women, infants, and children up to age five. It uses a food frequency questionnaire to assess nutritional problems of potential participants and thus to determine eligibility in their program. The program requires that the women, infants, and children are at nutritional risk and the family is at or below 185% of the poverty level in Nebraska. Food frequency questionnaires provide a list of foods that would be typically eaten within the targeted audience. Respondents indicate how frequently each food is eaten over a specified period of time. The use of a standard food frequency questionnaire can pose problems for people of different ethnic backgrounds and for those who have newly arrived in the United States.

Knowledge regarding the extent of dietary acculturation among Hispanic immigrants after migration to the United States is limited and difficult to assess since the Hispanic population comprises numerous subgroups. Examples of studies with this population are studies by Dewey et al. (1984) and Romero-Gwynn et al. (1993), who measured dietary change among migrant and immigrant Mexican American families in California. Hazuda et al. (1988) and Knapp et al. (1985) analyzed data from the San Antonio Heart Study, and Chavez et al. (1994) studied the effects of US residence on food intake among Mexican, Puerto Rican, and US-born Puerto Rican groups.

This study examined the differences in food intake between recent Hispanic immigrants to the United States and a second-generation Hispanic population. The usefulness of a food frequency instrument to which ethnic foods have been added for assessing nutritional intake of both immigrant and US-born Hispanic audiences was examined.

## Methods

### Respondents and Procedures

Hispanic female immigrants and US-born female citizens of Hispanic descent were recruited over a three-month period from WIC clinic sites and the Mexican American Commission in the Grand Island area. All participants, whether recruited from the Mexican American Commission or WIC clinic sites, were in the low-income category (185% of poverty level) that defines WIC program participation. Each participant was given a Standard Food Frequency (SFF), an Ethnic Food Frequency (EFF), and a

demographic questionnaire. For all participants, counselors were available to assist in completing the questionnaires. Immigrants were given surveys in Spanish by a Spanish-speaking interpreter. The demographic questionnaire asked about country of origin, length of time in the United States, and age category of the participant. The participant's birthplace was used to distinguish two groups, US-born and those born outside the United States (Immigrants). The project was approved by University of Nebraska Institutional Review Board.

## Food Frequency Questionnaires

The Ethnic Food Frequency (EFF) questionnaire was adapted from the Standard Food Frequency (SFF) questionnaire used by the WIC clinic, with the addition of 31 ethnic foods. The ethnic foods that were added were taken from a study by Romero-Gwynn et al. (1993), from interviews with Hispanic people in the Grand Island area, and from foods listed in 24-hour food recalls from Hispanic WIC clients. EFF food groupings appeared as: breads (*pan/cereals, postres*), vegetables (*verduras, legumbres*), fruits and fruit juices (*frutas y jugos*), combination dishes (*alimentos combinados*), meats (*carnes*), beverages (*bebias*), milk/milk products (*productos, lacteos*), and soups/stews (*sopas, caldos, guisados).*

On both food frequency questionnaires, participants were asked to indicate one of the following frequency categories for each food consumed: (1) once or more daily, (2) three or more times per week, (3) once a week, and (4) hardly ever or never. During their interviews clients completed the food frequency questionnaire according to foods they consumed in the past week.

To generate a food score by food group, scores were assigned as follows: 7 = eaten daily; 3 = eaten three or more times per week; 1 = eaten once a week; 0 = hardly ever or never eaten. Foods were categorized by six different food groups so that food scores could be calculated and compared between the Immigrant and US-born groups. The food groups were Bread, Vegetable, Fruits, Meats, Dairy, and Other.

## Ethnic Food Scores

To determine an ethnic food score, each of the 31 ethnic foods was assigned a score using the same scoring system described above. The calculated ethnic food scores (the sum of scores for each ethnic food) were

compared between the US-born and Immigrant groups. In this study, the ethnic food score analysis was used to assess the degree of dietary acculturation for both groups. If the overall ethnic food score was significantly different between the two groups, the degree of dietary acculturation was said to differ. High ethnic food scores were considered to indicate more adherence to a traditional Hispanic dietary pattern. Low scores were considered to indicate a movement away from the more traditional Hispanic diet. Significant differences were detected using an independent *t*-test at the $p < 0.05$ confidence level.

### Core Food Analysis

The Food Patterning Model (Jerome 1980) was applied to analyze the core foods of both the Immigrant and US-born groups. Core foods were all foods that were eaten at least once weekly. They were determined by a score of 1 for each food eaten once a week or more.

### Food Group Analysis

Food items from both the SFF and EFF questionnaires were categorized into one of six food groups (bread, fruits, vegetables, dairy, meats, others) so that each food group could be given a summary score. For each food category, a comparison of the mean summary score from the EFF and SFF questionnaires was made for both Immigrant and US-born groups. The General Linear Model (GLM) was used to calculate means, standard errors, and f-values. The GLM procedure was selected because this analysis accounted for the unbalanced subject totals in the Immigrant and US-born groups. The least significant difference (LSD) was done as the post hoc procedure to inspect differences between all pairs of means. Significance was established at $p < 0.05$.

## Results

### Demographics

The Immigrant group was composed of 30 people (63% Mexican, 30% Guatemalan, and 7% from other Latin American countries). The age ranges for the 30 immigrant respondents were as follows: 33% from ages 19-25; 56% from ages 26-35; and 11% from ages 36-42. All immigrants had been

in the United States for less than 11 years and 83% of them had been in the US less than six years. The age distribution of the US-born group was: 40% from ages 19-25, 28% from ages 26-35; and 32% from ages 36-42. The Immigrant group differed from the US-born group by having more participants in the 26-35 age category and fewer participants in the 36-42 age category. There was no difference in income level between the groups.

**Ethnic Food Score Analysis**

The mean ethnic food score was significantly higher for the Immigrant group ($74.44 \pm 23.38$) than that for the US-born group ($31.52 \pm 16.51$) ($p < 0.05$). The range of ethnic food scores in the Immigrant group was 32 to133. In the US-born group the range of ethnic food scores was 7 to 56.

A high consumption of ethnic foods indicated that the Immigrant group adhered to traditional foods, with little evidence of a high level of dietary acculturation. The lower ethnic food scores of the US-born group indicated a movement away from the traditional Hispanic diet and toward mainstream American foods. This pattern is supported in other studies (Guendelman and Abrams 1995; Otero-Sabogal et al. 1995). This relatively high consumption of key ethnic foods found in the Immigrant group compared to the US-born group supported use of dietary assessment tools that include ethnic foods for immigrant audiences, in particular.

**Core Food Analysis**

The list of the core foods for the Immigrant and the US-born groups is found in Table 1. A total of 32 foods were listed as core foods of the Immigrant group while only 14 core foods appeared in the diet of the US-born group. Of the 32 core food items in the Immigrants' diets, 13 of those foods were traditional ethnic foods. For the US-born group, only three of the 14 foods identified in the core diet were ethnic foods. Ethnic foods represented 41% of the core foods in the Immigrant diet compared to only 21% of the core foods in the US-born diet. Thus, the longer people are in the United States, the fewer ethnic core foods are found in their diets. These data again suggested that use of an EFF questionnaire is particularly important when gathering dietary information from immigrant Hispanic audiences but may not be as important for US-born Hispanic audiences.

The decreased number of foods in the core diet of the US-born group seems to indicate a decrease in the variety of foods composing the diets of

TABLE 1
CORE FOODS FOR IMMIGRANT AND US-BORN GROUPS

| Immigrant | US-born |
|---|---|
| Corn tortilla | Salsa, picante |
| Tomatoes, onions, cilantro | Refried beans |
| Chile serrano, chile colorado | Tomatoes, onions, cilantro |
| Pot beans (pinto beans) | |
| Chile jalapeño | Cheese |
| Mexican rice | Sodas |
| Refried beans | Watermelon, cantaloupe |
| Licados | Lemonades, other fruit drinks |
| Salsa, picante | Vegetable/corn oil, olive oil |
| Tomatillo verde, avocado | Hamburgers, steak |
| Mexican sweet bread | Chicken, turkey, duck |
| Hot cereals (atoles) | Milk, 2% |
| Mangoes, papayas | Butter, margarine |
| | Eggs |
| Milk, 2% | White bread |
| Eggs | |
| Cold cereals | |
| Apples, bananas | |
| Vegetable/corn oil, olive oil | |
| Lemonades, fruit drinks | |
| Juices | |
| Cheese | |
| Watermelon, cantaloupe | |
| Oranges, tangerines, grapefruit | |
| Sodas | |
| Whole milk | |
| Potatoes | |
| Peaches, pears | |
| Kool-Aid, Sunny Delight | |
| Lettuce, spinach | |
| Pork, goat, lamb | |
| Carrots | |
| Cabbage, cauliflower, broccoli | |

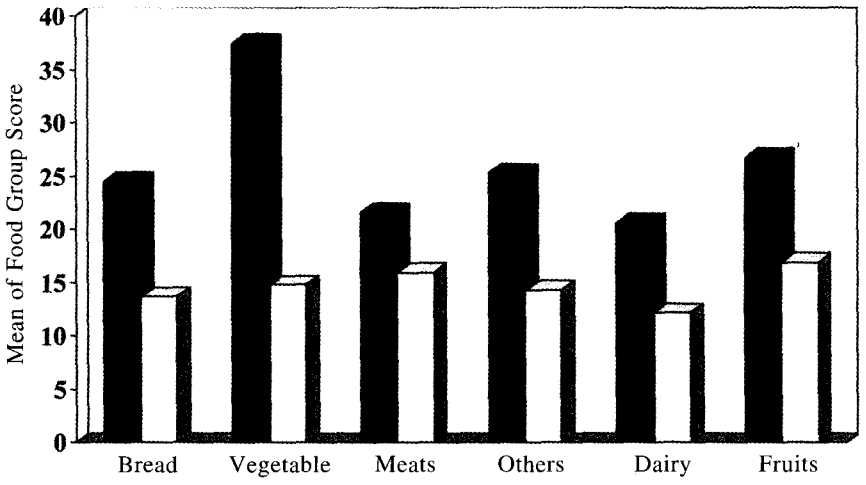


Figure 1. Food group score comparisons between Ethnic Food Frequency (black) and Standard Food Frequency (white) questionnaires for the immigrant group. For all food groups, EFF score vs. SFF score, $p < 0.05$.

these US-born Hispanic women. The US-born group had more in the core diet from animal protein sources, butter/margarine, and white bread compared to the Immigrant group. The Immigrant group diet contained a greater variety of fruits and vegetables.

## Food Group Analysis

For the Immigrant group, there were significant differences in the food group scores between the EFF and SFF questionnaires for all food groups (Fig. 1). The food group scores obtained from the EFF questionnaire were all significantly higher than the SFF food group scores ($p < 0.05$). This indicates that inclusion of ethnic foods on a food frequency questionnaire may allow for a better representation of true intake in immigrant audiences.

For the US-born group, no significant differences were found in any of the food group scores between the EFF and SFF questionnaires (Fig. 2). Use of the EFF questionnaire for the US-born audience would not necessarily yield different results than use of the SFF questionnaire to assess dietary intake.

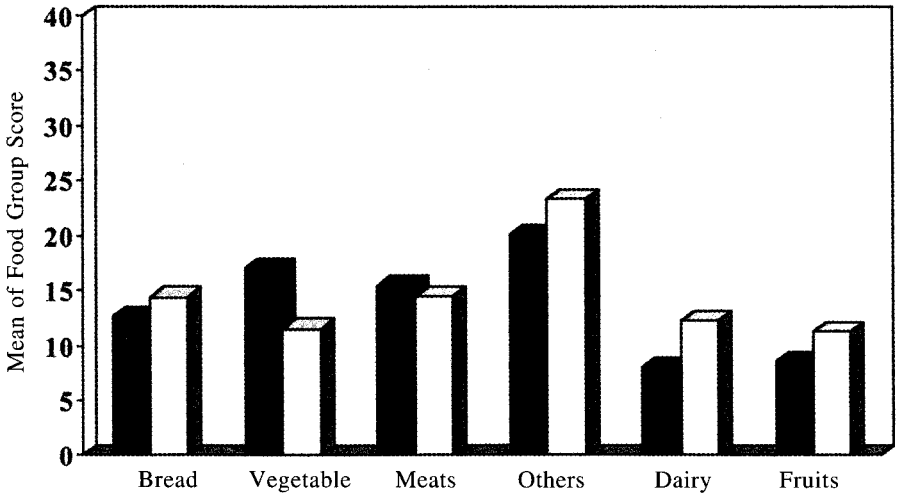


Figure 2. Food group score comparisons between Ethnic Food Frequency (black) and Standard Food Frequency (white) questionnaires for the US-born group.

## Discussion

The longer immigrants live in the US, the more likely their consumption of traditional foods will decrease and new foods will be adopted (Guendelman and Abrams 1995; Romero-Gwynn et al. 1993). At this time, dietary patterns of immigrants in Grand Island are mostly traditional in nature; however, as dietary acculturation increases, traditional food consumption will most likely decrease and new foods will be adopted. Romero-Gwynn et al. (1993) observed that traditional Mexican dietary patterns were composed of foods that are rich in complex carbohydrates, vegetable and animal protein, beta-carotene, and fiber. After migration, traditional foods that provided these nutrient components were abandoned, and substitutions and adoptions of new American foods took place. Consequently, the diet over time (represented by the US-born group in this study) resembled a typical American diet. Guendelman and Abrams (1995) also found that diet intake of first-generation Mexican American women was different from that of either second-generation Mexican American women or white non-Hispanic women.

Immigrants in this study consumed some new and convenient foods to some extent, but ethnic foods comprised the bulk of the diet. It appears that the relationship between the loss or abandonment of traditional ethnic foods and the adoption of new foods is a complex, nonlinear relationship that is dependent upon many social, economic, and cultural or ethnic factors (Bartholomew et al. 1990; Sanjur 1995). As Allen (1992) reported, the diets of the urban poor in Mexico consist of both modern and traditional foods. The diets of immigrants most likely represent an integration of both American and Hispanic dietary patterns that are constantly undergoing dietary acculturation. For these reasons, a food frequency questionnaire to which traditional ethnic foods have been added is highly recommended for Hispanic immigrants but is not as critical for the assessment of dietary intake of US-born Hispanic audiences.

## Conclusions

Leaders of public health nutrition programs, such as the WIC program, would be advised to use an adapted ethnic food frequency questionnaire to more adequately assess nutritional intake of their clientele. Such assessments could also be used to encourage clientele to continue some of their traditional ethnic food patterns that already meet recommended nutritional guidelines. For example, in this study, the Immigrant group had a greater variety of fruits and vegetables, a recommended nutrition practice, than did the US-born group. Future work with new Hispanic immigrant audiences should explore how to assist families in maintaining existing desirable dietary practices as they acculturate to their new areas of residence.

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